Yakeen NEET 2.0 2026

Physics by MR Sir

Vectors

Assignment-01
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1. Which of the following statements is false:

(1) Mass, speed and energy are scalars

(2) Momentum, force and torque are vectors

(3) Distance is a scalar while displacement is a vector

(4) A vector has only magnitude whereas a scalar has both magnitude and direction

2. Which of the following physical quantities is an axial vector?

(1) Displacement

(2) Force

(3) Velocity

(4) Torque

3. The direction of the angular velocity vector is along:

(1) Along the tangent of circular path

(2) Along the direction of radius vector

(3) Opposite to the direction of radius vector

(4) Along the axis of rotation

4. True/False

(i) All parallel vectors are equal vectors.

(ii) All equal vectors are also parallel vectors.

(iii) All opposite vectors are antiparallel vectors.

(iv) Unit vectors of two antiparallel vectors will be opposite vectors.

5. The forces, which meet at one point but their lines of action do not lie in one plane, are called:

(1) non-coplanar and non-concurrent forces

(2) coplanar and non-concurrent forces

(3) non-coplanar and concurrent forces

(4) coplanar and concurrent forces

6. If $\vec{A} = \alpha\hat{i} + 0.2\hat{j} + 0.8\hat{k}$ is a unit vector, then find the value of α

7. If $\vec{A} = 2\hat{i} + 3\hat{j} + \hat{k}$ then find it's unit vector?

8. If $\vec{A} = \hat{i} + 2\hat{j} + 2\hat{k}$ and $\vec{B} = \alpha\hat{i} + 6\hat{j} + 6\hat{k}$ are parallel vectors then find the value of α?

9. If $\vec{A} = \hat{i} + 2\hat{j} + 2\hat{k}$ and $\vec{B} = 2\hat{i} - 6\hat{k}$, then find a new vector $\vec{C}$ which as magnitude equal to $\vec{A}$ and in the direction of $\vec{B}$?

10. If $\vec{A} + \vec{B} = \vec{C}$ and $|\vec{A}| = 5, |\vec{B}| = 3$ and $\vec{C} = 6$ then find angle between $\vec{B}$ and $\vec{C}$.

(1) $60°$ (2) $37°$

(3) $\cos^{-1}\left(\frac{5}{9}\right)$ (4) $\cos^{-1}\left(\frac{1}{15}\right)$

11. If $|\vec{A} + \vec{B}| = |\vec{A}| + |\vec{B}|$ then angle between $\vec{A}$ and $\vec{B}$ will be

(1) $0°$ (2) $90°$

(3) $180°$ (4) $30°$

12. If $|\vec{A} - \vec{B}| = |\vec{A}| + |\vec{B}|$ then angle between $\vec{A}$ and $\vec{B}$ will be

(1) $0°$ (2) $90°$

(3) $180°$ (4) $30°$

13. If the angle between two vectors increases, the magnitude of their resultant

(1) decreases

(2) increases

(3) remains unchanged

(4) first decreases and then increases

14. If $|\vec{A}+\vec{B}|=|\vec{A}-\vec{B}|$ then which of the following option will be correct?

(1) Magnitude of $\vec{A}$ may be zero.

(2) Magnitude of $\vec{B}$ must be zero.

(3) Angle between $\vec{A}$ and $\vec{B}$ must be 90°

(4) Angle between $\vec{A}$ and $\vec{B}$ may be 90°

15. If resultant of two unit vector is also a unit vector then angle between these two vector will be

(1) 0 (2) $\frac{\pi}{6}$

(3) $\frac{\pi}{3}$ (4) $\frac{2\pi}{3}$

16. If difference of two unit vector is also a unit vector then angle between these two vector will be

(1) 0 (2) $\frac{\pi}{6}$

(3) $\frac{\pi}{3}$ (4) $\frac{2\pi}{3}$

17. The vector sum of two vectors of magnitude 10 N and 16 N cannot be

(1) 2N (2) 8N

(3) 18N (4) 20N

18. Which of the following pair of forces may give zero resultant?

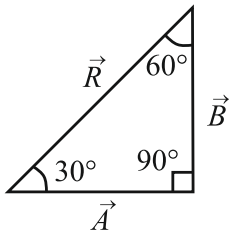
(1) (5N, 15N, 21N) (2) (3N, 5N, 1N)

(3) (3N, 5N, 6N) (4) (1N, 2N, 4N)

19. Sum of magnitude of two vectors is 16 unit and magnitude of their resultant is 8 unit. Resultant vector is perpendicular to the smaller vector, then find magnitude of these two vector?

20. If resultant $\vec{R}$ of vectors $\vec{P}$ and $\vec{Q}$ is perpendicular to $\vec{P}$ and $|\vec{P}|=|\vec{R}|$ then find angle between $\vec{P}$ and $\vec{Q}$?

21. If resultant of two vectors makes 30° and 60° with these vectors and has a magnitude of 40 units, then find magnitude of these vectors?



22. If two force of 6N and 8N are acting perpendicular to each other then net force on the object will be?

(1) 14N

(2) 10N

(3) 2N

(4) $10\sqrt{2}$ N

23. If $|\hat{A}-\hat{B}|=\sqrt{2}$ then calculate the value of $|\hat{A}+\sqrt{3}\hat{B}|$?

(1) 1 (2) 2

(3) $\sqrt{2}$ (4) $\sqrt{3}$

24. **Statement-I:** A vector is a quantity that has both magnitude and direction and obeys the triangle law of addition.

Statement-II: The magnitude of the resultant vector of two given vectors can never be less than the magnitude of any of the given vector.

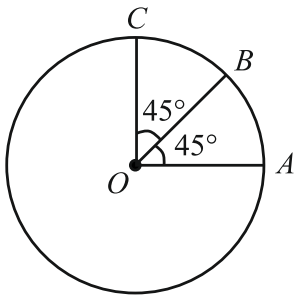
(1) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I

(2) Both Statement-I and Statement-II are correct but Statement-II is not the correct explanation for Statement-I

(3) Statement-I is correct but Statement-II is incorrect.

(4) Statement-I is incorrect but Statement-II is correct.

25. Find the resultant of three vectors and shown in the following figure. Radius of the circle is R.



(1) $2R$ (2) $R\left(1+\sqrt{2}\right)$

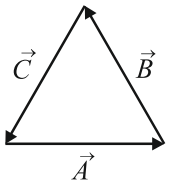
(3) $R\sqrt{2}$ (4) $R\left(\sqrt{2}-1\right)$

26. A set of vectors taken in a given order gives a closed polygon. Then the resultant of these vectors is a

(1) scalar quantity (2) pseudo vector

(3) unit vector (4) null vector

27. Which of the following option is correct for given figure?



(1) $\vec{A}=\vec{B}+\vec{C}$ (2) $\vec{B}=\vec{A}+\vec{C}$

(3) $\vec{C}=\vec{A}+\vec{B}$ (4) $\vec{A}+\vec{B}+\vec{C}=0$

28. Number of vectors of zero resultant

(i) Minimum number of non-zero forces required for zero resultant?

(ii) Minimum number of non-zero unequal forces required for zero resultant?

(iii) Minimum number of non-coplanar forces required for zero resultant?

ANSWER KEY

1. (4)
2. (4)
3. (4)
4. (i) False
   (ii) True
   (iii) True
   (iv) True
5. (3)
6. $\alpha = \pm\sqrt{0.32}$
7. $\vec{A} = \frac{2\hat{i} + 3\hat{j} + \hat{k}}{\sqrt{14}}$
8. $\alpha = 3$
9. $\vec{C} = \frac{3}{\sqrt{5}}(2\hat{i} - \hat{k})$
10. (3)
11. (1)
12. (3)
13. (1)
14. (1, 4)
15. (4)
16. (3)
17. (1)
18. (3)
19. 10
20. 135°
21. #
22. ()
23. ()
24. ()
25. ()
26. (4)
27. (4)
28. (i) 2
    (ii) 3
    (iii) 4

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